QA
76
M94
SIRL

M U D P I E no. 12

Museum and University Data, Program and Information Exchange

THE INFORMATION BAZAAR

The sixth annual national colloquium on information retrieval, held in Philadelphia May 8-9, 1969, has just been published under the above title, by the Medical Documentation Service, The College of Physicians, Philadelphia, Pa. As a complete outsider, I might be excused for wondering, after reading half dozen such symposia and summary volumes in the past year or so, whether any of the attendees ever listen to or read the other guy's paper. One would hope that a single tangible result to spring forth from these efforts might be a coordinated effort to work out some of the basic problems, but there seems to be just as much duplication of effort here as that noted in MUDPIE no. 3 (p. 2) at the Mexico City Symposium. The "network" concept is getting more and more common, and gets quite a workout in this volume.

Perhaps of greatest interest to MUDPIE readers are the two papers mentioned in MUDPIE no. 8 as available in mimeo from the Smithsonian, which are now published in full in this volume. Reginald Creighton and Richard King present a summary of the SIIR system for biological and petrographic data retrieval, and D. Piacesi joins with Creighton in writing about their solution to geographical coding of collection data.--JAP

WILL NUMERICAL TAXONOMY EVER SETTLE DOWN AND FIND HAPPINESS WITH MERCY HUMPP?

A recent book seems to indicate yes, if one substitutes classical systematics for the good Miss Humpp. "Numerical Taxonomy," the proceedings of a colloquium in numerical taxonomy held in the University of St. Andrews, September, 1968, was edited by A. J. Cole, and published by the Academic Press, 1969, xv + 324. The group that got together for this conference appears to have been composed of individuals who think numerical taxonomy might have something to offer to the practicing taxonomist as an aid to understanding what is going on with his organisms. There are no wild, extravagant claims here concerning the solution of all of taxonomy's problems, no urging of the mossbacks to throw off their millstones and join the taxonomic revolution, and little or no derision, implicit or explicit, of the taxonomist who genuinely prefers to continue to do things his own way. Several of the participants were not taxonomists, and in at least one paper, the deficiency was painfully evident. In others, the authors were attempting to utilize some of the techniques of numerical taxonomy in completely different fields, such as social geography or economics. There are eighteen papers in all, plus an appendix on the computer programs used by the various authors.--JAP

SMITHSONIAN
OCT 8 1970
LIBRARIES

SMITHSONIAN USAGE OF TIME-SHARED COMPUTERS

In connection with a recent analysis of time-shared computer use in the Smithsonian Institution the following list was drawn up. We even surprised ourselves with the diversity of application that exists here, and it seems likely that MUDPIE readers may find some work of interest to follow up. Individuals associated with the various operations can be identified if necessary, but in most cases a letter to the unit concerned will end up in the right place.--JAP

SMITHSONIAN UNIT	KIND OF USE	SPECIFIC OPERATION
Botany	Date storage and retrieval	Text editing
		Identification of unknowns
		Construction of keys
		Printing diagnoses of taxa
	Computer network	MSU-SI
Reptiles and Amphibians	Data storage and retrieval	Identification of unknowns
		Zoogeographic analysis
		Mailing lists
	Numerical taxonomy	Prim network analysis
	Computer simulation	Mimic-model relationships
	Museum Exhibition	Public Q.-A. program
	Statistical Computation	Standard biostatistics
	Program Development	"Quantitative Zoology" handbook
	Education and Instruction	Courses in "BASIC" Language
	Information Exchange	"MUDPIE"
	Computer network	USNM-AMNH
Freer Gallery	Statistical Computation	Standard statistics
		Weight conversions
		X-ray diffraction data
	Computer Graphics	Data plotting
		Analysis of form
Conservation Laboratory	Statistical Computation	X-ray spectra and fluorescence
		Standard statistical methods
Paleobiology	Numerical Taxonomy	Cluster analysis
	Statistical Computation	Regression analysis
		Canonical analysis
		Principal components analysis
		Standard biostatistics
		Information function
Fishes	Statistical Computation	Standard biostatistics
	Computer Graphics	X-Y plotting
Mammals	Statistical Computation	Standard biostatistics
		Multivariate analysis
Invertebrate Zoology	Statistical Computation	Species-sample homogeneity
	Data Storage and Retrieval	Matrix analysis of crustacean sp.

AVAILABLE PROGRAMS

TAB 1--Frequency distributions, total individuals, mean, standard deviation, minimum and maximum values for each character in analysis.

XYPLOT--Graphic plot of data from combinations of any two characters in analysis.

HGROUP--Designed to cluster profiles such that there is a minimum variation within the groups and a maximum variation between groups.

BMDO7M--Determines whether the differences among the means of groups formed by Investigator or by "HGROUP" are statistically significant.

PARTIAL CORRE--Computes both Pearson product-moment correlations and partial correlations.

HYBEX--Assigns a hybrid value to each character and totals these values to give a hybrid index for that plant.

These programs are discussed in greater detail in the paper by Govoni, Dennis N., J. C. Anway, J. R. Sligo, and T. J. Hummel. Six computer programs useful in plant population analysis. Taxon, 19, 1970, 320-323.

Printouts of the programs can be obtained from the senior author at the Department of Botany, University of Nebraska, Lincoln, Nebraska.

COMPUTER-ASSISTED INSTRUCTION

Atkinson, R. C. and H. A. Wilson. Computer-assisted instruction: A book of readings. Academic Press, 1969, xi + 362. A collected series of short papers on various aspects of the use of the computer as a teaching aid. Techniques described herein are equally useful for museum purposes, of course. One of the papers (Kopstein and Seidel, Computer-administered instruction versus traditionally administered instruction: economics) clears up a question left unanswered in MUDPIE no. 5 (p. 4) as to how the price per student hour might get as low as twenty-five cents. This kind of figure is based upon calculation of full-time student use working with rented computer systems. For example, Kopstein and Seidel use information on prices for use of an IBM 1460, with an assumed capacity of 20 student stations and an assumed use by the students for six hours per day for 22 days each month, plus use in adult evening education, plus use on Saturdays for nine hours. This gives a total of 8640 student student hours, with the total cost for data storage, information processor, communications and a computer operator amounting to $14,000. Division of the cost by the use gives a cost per student hour of $1.74. A museum considering setting up a service of this sort for its visitors should not expect its costs to be that low unless the usage would be that concentrated, of course. One would

have to start off with the assumption that the basic cost would be $14,000 per month, and there would be a certain period of education involved while the public learned to use the machines, during which time it would be almost impossible to charge enough for each contact to begin to pay off the set costs.--JAP

COMPUTER USE BY RUSSIAN BIOLOGISTS

The following series of papers appeared in the 1969 volume of "Materialy rybokhoziaistvennykh issledovanii severnogo basseina." I haven't the vaguest clue as to their content or significance. If anyone is interested enough to have a translation done, he should notify MUDPIE, so the translation could be available to others.--JAP

Pischaskin, Yu. A. Mechanization of calculating operations applying for biological investigations with the help of the punching equipment. pp. 3-13.

Tretyak, V. L. The use of the electronic-digital computer "Mir" for oceanographic investigations. pp. 14-42.

Podymakhin, V. N., I. L. Rybakov. An analysis of complex gamma-spectra with the help of the electronic-digital computer "Mir." pp. 43-48.

Guzenkova, I. R. Processing of ichthyological data by methods of the mathematical statistics (the O-group haddock is taken as an example). pp. 49-75.

Ostrovskaya, L. A. Improvement of planning the production line of fishery enterprises while using the electronic computers. pp. 76-123.

Andrianov, I. A. The using of an integral linear programming for the fishery industry. pp. 124-135.

Shabanova, E. V. The using of a method of a parametric linear programming for the optimization of plans of fish-processing plants on shore. pp. 136-?

RECENT LITERATURE

Allen, Ruth. An annotated bibliography of biomedical computer applications. National Library of Medicine, no date, pp. 1-216.

Bellman, R. E., K. L. Cooke, and J. A. Lockett. Algorithms Graphs and Computers. Academic Press, 1970, pp. xv + 246.

Faiman, M. and J. Nievergelt (Editors). Pertinent concepts in computer graphics. University of Illinois Press, 1969, pp. ix + 439.

Gambarian, P. P. A modification of the mathematical methods of taxonomy. Biol. Zhurnal Arm., 22 (10), 1969, pp. 94-97 [in Russian].

_____ The defence of numerical taxonomy. Biol. Zhurnal Arm., 22 (11), 1969, p. 100 [in Russian].

Haspelová-Horvatovičová, A., and M. Postulková. Evaluation of biological experiments by the electronic computer GIER in ALGOL on the basis of Students t-test. Biologia; Series A-Botanica, Vydavatelstvo Slovenskej Akademie Vied, vol. 4, 1970, pp. 251-254 [in German].

Hodge, B. Computers for engineers; introduction to computing machines and programming. McGraw-Hill Co., N.Y., 1969, pp. xii + 212.

Juskevice, John A. On computerizing collections. Geological Society of America Bulletin, 81, 1970, pp. 1597-1600.

Reyment, R. A. (Editor). Symposium on biometrical methods in paleontology. Bulletin of the Geological Institutions of the University of Uppsala, New Series, vol. 2, 1970, pp. 1-89.

Roberts, Lou Anne. Literature on reptilian physiology and related fields. Computer Center, Texas Technological College, Lubbock, Texas, 1969, pp. vii + 210. [A index organized through the use of the IBM "KWIC" programs, using the 1401 computer, and includes a bibliography, and author index, and a title key-word index.]

COMPUTER USE AT THE ROYAL ONTARIO MUSEUM

The National Research Council of Canada has awarded the Department of Zoology, University of Toronto, a grant intended to stimulate research and student training in systematics and evolutionary biology. As one segment of the activities associated with this grant, the Department of Zoology has recently set up in the Royal Ontario Museum a small computer to aid in (1) cataloguing, storing and selectively retrieving specimen information, (2) routine statistical operations, and (3) gathering of data useful in systematic studies. Readers of MUDPIE may be interested in this system.

The central processor is a Digital Equipment Corporation, PDP-8/I computer with 4K memory. There are two DEC tape units, one used to access departmental programs and the other for intermediate data storage, in addition to a larger magnetic tape recorder that allows capture of data on tape in an IBM compatible format. Specimen records are permanently stored on 7-track magnetic tape. Input is by paper tape or teletypewriter. Output is via the teletypewriter for rough copy or a carbon-ribbon, IBM Selectric typewriter for finished copy. The computer also handles data from an X-Y coordinate digitizer which is used to rapidly gather measurements and data for systematic studies.

Each of six life science departments in the R.O.M. will eventually use the equipment for routine accessioning and cataloguing procedures. Formats for input, data storage on tape, and output are specifically designed to meet the needs of each department. Routine statistical operations may be easily handled by FOCAL, a simple conversational programming language. Other compilers are also available.

We would be interested in hearing from other institutions that may have or intend to have similar equipment. Perhaps a mutually beneficial exchange of software, particularly FOCAL programs, could be arranged. Parties interested in more information may contact Dr. D. M. Power, Department of Ornithology, or Dr. E. J. Crossman, Department of Ichthyology, Royal Ontario Museum, Toronto 181, Ontario, Canada. Designers of the system are Ruscom Logics Ltd., Alness Street, Downsview, Ontario, Canada, who can provide detailed information on hardware and interfaces.--D. M. Power

DIRECTORY OF COMPUTER PROGRAMS

Science Associates/International, Inc., 23 East 26th Street, New York, N. Y. 10010, plans the immediate publication of two directories concerned with computer use in the sciences. The first will list computer programs in science and technology, the second deals with storage and retrieval of computerized information. The deadlines for the receipt of material for the first is Oct. 9, 1970, while for the second it was Sept. 25, 1970. We are duplicating their forms for submission of information, so any MUDPIE reader could send his stuff in if he wishes. If additional forms are needed, they can be called at (212) 532-1955.--JAP

Division of Reptiles and Amphibians
National Museum of Natural History
Smithsonian Institution
Washington, D. C. 20560
September 1970

Do not write in this space

INPUT FORM

DIRECTORY OF COMPUTER PROGRAMS IN SCIENCE & TECHNOLOGY

1. TITLE OF PROGRAM. (Please be as descriptive as possible since title will be used in a permuted title index.)

2. AUTHOR. (May be individual or corporate names.)

3. DESCRIPTION OF PROGRAM. (Purpose; application; method - mathematical, theoretical or empirical; limitations and constraints.)

4. STATUS. (Date first operational, or "in development;" other users.)

5. SOFTWARE. (Operating system and language used.)

6. HARDWARE. (Brand, model number and configuration; storage capacity - core, disc, tape, other; typical running time.)

7. SPECIAL REQUIREMENTS.

8. AVAILABILITY, COST, FORMAT AND DOCUMENTATION.

9. SOURCE FOR ADDITIONAL INFORMATION. (Personal name, title, name of organization, address, phone number.)

10. NAME OF PERSON COMPLETING THIS FORM.

© 1968 by Science Associates/International, Inc.

Use reverse side for additional information.

Please return completed form to: science associates/international, inc.
23 East 26th Street New York, N.Y. 10010

INPUT FORM

DIRECTORY OF COMPUTERIZED INFORMATION IN SCIENCE & TECHNOLOGY

Do not write in this space

DCI# _____

Subj.
Class. _____

PLEASE TYPE

1. Name of institution holding collection.

2. Title of collection. (Please be as descriptive as possible since title will be used for a Permuted Title Index.)

3. Author/Editor/Compiler/or System Designer. (May be individual or corporate names.)

4. Description or abstract of collection. (Scope, function, source of input, period covered by collection, form of input, possible users, software information: language, program system, special methodology used, compatability data.)

5. Date compilation completed. (Provision for updating, if any.)

6. References to publications and reports relative to collection.

7. Hardware information. (Brand name, model number, storage medium, number of tape reels, etc., compatability data.)

8. Forms of output available.

9. Availability to users. (Restrictions, costs of single or periodic searches, rental, subscription, purchase.)

© 1967 by Science Associates/International, Inc.

Use reverse side for additional information.

Please return completed form to: SCIENCE ASSOCIATES/INTERNATIONAL, INC.
23 East 26th Street New York, N.Y. 10010